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Observations on Clinical Acetonaemia in the Cow in the Island of Jersey*

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Though acetonaemia has been known to exist in Jersey for over 40 years it was described as dyspepsia. It is always associated with parturition and sometimes accompanied by nervous symptoms.

The term "acetonaemia," which merely implies the increase of acetone (ketone) bodies in the blood, is used erroneously. It has been shown that ketone bodies, even at ten times the normal, are not toxic in themselves—Green and Eden[1]. Stinson[2] suggested the name hypoglycaemic ketosis, which describes the condition more accurately. Udall[3] describes it as a post-parturient disease of well-fed high-producing cows, characterised by a marked hypoglycaemia and acetonaemia, thought to be due to a deranged carbohydrate metabolism.

It has been demonstrated that, following parturition, no reduction is observed in the amount of blood sugar in the normal cow, but there may be a tendency towards acetonaemia at the time of parturition. In marked ketosis, however, there is a pronounced drop in the blood sugar and a substantial increase in blood ketones (see case records).

It has repeatedly been pointed out that as this condition makes its appearance soon after calving, pregnancy or parturition may be responsible, but it must not be overlooked that lactation follows parturition and as acetonaemia is always associated with high milk production, it is reasonable to suppose that intensive mammary activity is a more likely cause.

Hupka[4] has suggested that hypoglycaemia is the essential and primary cause of acetonaemia, but cannot explain the reason. Is it possible that there is a temporary imbalance between the various hormones secreted at the time of parturition? Kay[5], in his review article on mammary activity, and Green[6] say, "The dairy cow is the creature of her pituitary and cannot rise above the functional efficiency of this gland." The hormone prolactin which stimulates lactation is derived from the anterior pituitary, which also secretes a diabetogenic factor. Is it therefore not probable that the dairy cow, with its greatly hypertrophied udder (and this applies particularly to the Jersey) requires an increased secretion of prolactin which may cause an upset in the production of the diabetogenic factor resulting in hypoglycaemia?

I do not propose to delve into the biochemical side, but the blood levels of ketone and sugar, which concern us directly in this case, may be of interest.

The Ketones.—It is recognised that in the normal cow the amount of acetone bodies in the blood is similar to that of other mammals, *viz.*, a few milligrammes per cent. The amount usually falls below 5 per cent. and it is therefore generally regarded as normal if it is below this figure. If the amount is between 5 and 15 mg. the case is regarded as mild and above 15 mg. per cent. as marked.

Blood Sugar.—Literature on this subject is confusing but it would seem that it falls between 50 and 60 mg. per 100 c.c. of whole blood in the lactating cow, according to Boddie[7].

Observations

For the purpose of this communication I have reviewed two periods, *viz.*, September 28th, 1935, to June 10th, 1936; November 3rd, 1939, to June 8th, 1940.

During the first period under review blood and milk samples from 53 cases of marked acetonaemia were sent to Drs. Green and Allcroft for biochemical analysis.

Blood sugar was not estimated in 12 cases.
" " " normal (rather low) in 7 cases.
" " " below normal in 33 cases.

Thus it will be seen that marked acetonaemia is accompanied by hypoglycaemia. One case showed hypocalcaemia, hyperglycaemia and acetonaemia.

CASE RECORDS

Case No. 185

Selected to demonstrate intensive mammary activity.

Subject.—Cow, two years of age; number of parturitions, one.
Date of attack, 22.5.36. Date of parturition, 20.5.36 (namely, two days before attack).

Diagnosis, Symptoms and Treatment.—Acetonaemia—odour of acetone in mouth and milk. Milk yield: 4 gallons per day four days before parturition. Two weeks before this animal had been attended because of a greatly enlarged udder, the owner was advised to milk her with the result that she was yielding 4 gallons of milk per day before calving.

Treatment.—2 ounces of dextrose in 200 c.c. of water intravenously.
Biochemical Data.

Date, 22.5.36	
Ca. mg. per cent. serum	9·2
Mg. mg. per cent. serum	2·4
Acetone mg. per cent. serum	19·3

*Case No. K*84

Selected to demonstrate the following point referred to in the paper: "Cow affected with milk fever complicated by acetonaemia of a mild character, later developing into a case marked acetonaemia."

Subject.—Cow, 13 years of age; number of parturitions, 12.
Date of attack, 3.2.36. Date of last parturition, 3.2.36.

Diagnosis and Symptoms.—Milk fever complicated by acetonaemia. Cow unable to rise, temperature subnormal, partially comatose. Odour of acetone in milk.

Treatment.—400 c.c. of 20 per cent. solution ca. borogluconate intravenously. 21.2.36 (*viz.*, 17 days later). Typical marked acetonaemia; reeling about, off food, marked odour of acetone in mouth and milk.

Treatment.—4 ounces dextrose in 400 c.c. of water intravenously, followed by daily doses of iron sulphate in treacle.

Biochemical Data.

Dates	4.2.36	21.2.36
Ca. mg. per cent. serum	3·6	8·5
Mg. mg. per cent. serum	3·9	2·2
Acetone mg. per cent. serum	14·6	45·4
Sugar mg. per cent. blood	57	28

*Case No. K*83

Selected to demonstrate the necessity of repeated dextrose injections.

Subject.—Cow, six years of age; number of parturitions, four.
Date of attack, 31.1.36. Date of last parturition, 16.1.36.

Diagnosis and Symptoms.—31.1.36. Typical case of marked acetonaemia with the usual symptoms. This animal has been affected with acetonaemia after the last three parturitions.

Treatment.—4 ounces dextrose in 400 c.c. of water intravenously.
11.2.36 (eleven days later). This cow had shown a marked improvement following the injection of glucose, but has now relapsed and is considerably worse than on 31.1.36.

Treatment.—4 ounces dextrose in 400 c.c. of water intravenously + iron sulphate in treacle daily.

Response to Treatment.—Improvement when visited five days later.

Biochemical Data.

Dates	31.1.36	11.2.36
Ca. mg. per cent. serum	8·6	9·2
Mg. mg. per cent. serum	3·3	2·2
Acetone mg. per cent. serum	58·0	105·0
Acetone mg. per cent. milk	—	—
Sugar mg. per cent. blood	32·0	27·0

TABLE
1ST PERIOD UNDER REVIEW: September 28th, 1935, to June 10th, 1936.
2ND PERIOD UNDER REVIEW: November 3rd, 1939, to June 8th, 1940.

1ST PERIOD	2ND PERIOD
Number of cases recorded, 102. Marked cases (53), mild (49).	Number of cases recorded, 30 (marked cases).

SEASONAL DISTRIBUTION

Marked and Mild	Cases	*Marked*	Cases
Oct. to Dec. (inc.)	39	Nov. to Dec. (inc.)	10
Jan. to March	37	Jan. to March	7
April to June 6th	26	April to June 8th	13

AGE

Years	Cases	Years	Cases
2–3	8	2–3	7
4	7	4	1
5	11	5	2
6	34	6	7
7	11	7	3
8	10	8	1
9	8	9	6
10	2	10	—
11	—	11	—
12	4	12	1
13	1	13	1
14	1	14	1

Five cases, age not ascertained.

TIME ELAPSED AFTER CALVING

MARKED CASES ONLY.	Cases		Cases
Under 10 days	14	Under 10 days	2
10 to 30 days	29	10 to 30 days	20
40 to 70 days	3	30 to 40 days	7
Seven cases, time not ascertained.		One case not ascertained.	

ACETONE PER 100 C.C. OF SERUM

MARKED CASES ONLY.	
Varied between 15 and 105 mg.	Between 17 and 68 mg. Average of 30 cases: 44 mg. per 100 c.c.

BLOOD SUGAR

MARKED CASES ONLY.	
33 cases showed hypoglycaemia.	22 cases showed hypoglycaemia.
7 " " normal.	2 " " normal.
12 " not estimated.	6 " not estimated.

*Presented to the Royal Counties Division, N.V.M.A., November, 1942.

Case No. KA185

Selected to demonstrate clinical improvement following repeated glucose injections. A slight relapse possibly associated with high milk yield.

Subject.—Cow, two and a half years of age. One parturition—calved on October 30th, 1939.

Diagnosis and Treatment.—16.11.39 (17 days after calving). Typical acetonaemia, usual symptoms. Drop in milk yield from 3 gallons to 2 gallons per day. Condition poor. Treatment—4 ounces dextrose intravenously + iron sulphate.

21.11.39.—This case is not improving satisfactorily and for the last three days has been vomiting practically all food eaten. Still a marked odour of acetone in the mouth.

Treatment.—4 ounces dextrose intravenously + iron sulphate in treacle.

23.11.39.—Cow is better; has stopped vomiting; has appetite; general condition has reduced, but milk yield increasing.

Treatment.—4 ounces dextrose intravenously + iron sulphate in treacle.

27.11.39.—Cow is considerably better; general condition still poor, but milk yield increasing.

Treatment.—4 ounces dextrose intravenously + iron sulphate in treacle.

Biochemical Data.

Dates	16.11.39	21.11.39	23.11.39	27.11.39
Ca. mg. per cent. serum ..	9·2	9·2	9·5	8·6
Mg. mg. per cent. serum ..	2·9	3·3	3	3·2
Acetone mg. per cent. serum	38·9	21·4	Nil	12·6
Acetone mg. per cent. milk	20·4	Nil	Nil	Nil
Sugar mg. per cent. blood	Not estimated	49	59	54

Case No. KA168

Selected to demonstrate the value of repeated glucose injections.

Subject.—Cow, two and a half years of age; number of parturitions, one.

28.2.40.—Typical acetonaemia. Smell of acetone in mouth and milk. Temperature normal. Condition very poor. Milk yield decreasing.

Treatment.—4 ounces dextrose in 400 c.c. of water intravenously + tonics in treacle.

2.3.40.—Better; appetite good. Milk yield higher; condition still very poor. Still smell of acetone.

Treatment.—4 ounces dextrose in 400 c.c. of water intravenously + tonics in treacle.

6.3.40.—Very much better. Temperature, appetite normal, especially grass. Milk yield now 3 gallons per day.

Treatment.—4 ounces dextrose in 400 c.c. of water intravenously + tonics in treacle.

Biochemical Data.

Dates	28.2.40	2.3.40	6.3.40
Ca. mg. per cent. serum	9·4	9·3	9·5
Mg. mg. per cent. serum	3	2·7	3
Acetone mg. per cent. serum ..	68	58	Nil
Acetone mg. per cent. milk	39	16·5	
Sugar mg. per cent. blood	54	36	61

Case No. K177

Selected to demonstrate the necessity for turning affected animals out to pasture.

Subject.—Cow, three years of age; number of parturitions, two.

Clinical Reports.—28.3.40 (*viz*, 23 days after parturition). Acetonaemia—very marked case, staggering about, smell of acetone. Has been affected for at least five days. Appetite poor; milk yield was good but dropping rapidly. Was also affected last year.

Treatment.—4 ounces of dextrose in 400 c.c. of water intravenously + tonics in treacle.

2.4.40.—Reported better by owner, but I do not think so. Owner, contrary to advice, has not turned the cow out. Smell of acetone is more marked than on first visit.

Treatment.—4 ounces of dextrose in 400 c.c. of water intravenously + tonics in treacle.

5.4.40.—This cow now has a better appetite and milk yield is increasing, but still a smell of acetone. Animal has been turned out to pasture.

Treatment.—4 ounces of dextrose in 400 c.c. of water intravenously + tonics in treacle.

Biochemical Data.

Dates	28.3.40	2.4.40	5.4.40
Ca. mg. per cent. serum	8	9·2	9·5
Mg. mg. per cent. serum	3	2	3·3
Acetone mg. per cent. serum ..	56	62	33·6
Acetone mg. per cent. milk	32	26	12·6
Sugar mg. per cent. blood	—	39	40

Of the 102 cases recorded in the first period, 53 were marked (*viz.*, over 15 mg. per 100 c.c. of serum). One showed 105 mg. per 100 c.c. of serum.

Forty-nine were of a mild character (*viz.*, between 5 and 15 mg. per 100 c.c. of serum).

Dealing first with the marked cases, 47 of these were typical cases of acetonaemia and six were primarily milk fever complicated by acetonaemia. On the other hand, of the 49 mild cases, 45 were primarily milk fever with acetonaemia as a complication—thus, a certain number of cases of milk fever were complicated by acetonaemia, usually of a mild character, not recognised clinically and requiring no treatment. It must, however, be pointed out that a proportion of these cases develop symptoms of marked acetonaemia within a few days or weeks.

This condition always occurs in the well-nourished post-parturient cow of any age, at any time of year, in an animal that has calved normally and has expelled the foetal membranes within the normal period. Although odd cases have been encountered in which the foetal membranes have been retained, this cannot be regarded as an important factor.

(*a*) It has been frequently seen in the same cow at successive parturitions.

(*b*) It is almost certain that milking cows three times a day, thereby increasing production, and not drying cows off, have some influence on the condition.

(*c*) Cases in pregnant cows have not been recognised.

Age (see table).—Although this is not a significant factor, varying from 2 to 14 years, it will be seen that the condition is more commonly encountered in cattle six years of age, and it is at this age that cows are at their best for milk production.

Time of Year (see table).—It is rather unfortunate from this point of view that the two periods reviewed were autumn and winter, but the condition occurred throughout the summer in the same proportion.

Time after Calving (see table).—Looking at the table, it will be noticed that the large majority of marked cases occurred between 10 and 30 days after calving.

Symptoms and Diagnosis

Mild.—Frequently no symptoms are noticed. As has already been pointed out, cases of a mild nature were usually complications of milk fever and it was only after receiving the biochemical report that it was seen. A few, however, were recognised and treated accordingly.

Marked.—*Appetite* is diminished, in some instances the animal eating absolutely nothing.

Marked Loss in Body Weight.—The rapidity with which this occurs is one of the most diagnostic symptoms of the disease. The animal gets tucked up and will stand in a characteristic attitude with arched back and the body twisted to one side or the other; if made to move it may reel about, progressing slowly and stiffly. The hocks are often straighter than normal (*viz.*, less cowhocked).

Temperature, Pulse, Respiration and mucous membranes are normal. There is a progressive diminution in milk secretion, which is not related to the severity of the attack. Thus a cow was observed badly affected for one month, eating not more in a week than the normal calf would in a day, still producing 40 lb. of milk per day.

The patient is dull; rumination, although not in abeyance, is slow; constipation, faeces covered with mucus, is an early symptom which may be followed by very troublesome diarrhoea.

The characteristic odour of acetone in the expired air and in the milk is the one infallible symptom and the one on which all the marked cases were recognised. This smell of acetone is so marked that it is often recognised on entering the cowshed.

There is often a depraved appetite, eating soiled bedding, etc., and in Jersey, where all the cattle are tethered, I have frequently noticed affected animals eating patches of grass, about the size of a soup plate, right to the ground. Vomiting has been seen in one instance.

Finally, the animal may become emaciated, an oedematous swelling developing under the jaw.

Marked Cases Showing Nervous Symptoms.—The following symptoms may be observed in addition to the above: staggering about, licking walls, licking themselves sore, champing of the jaws with increased salivation, biting and sucking, apparent blindness. The temperature in these cases may be elevated. Pulse and respirations are quickened.

Involuntary muscular movement; when the animal is made to move forward it is unable to do so on a straight line.

Some affected animals will raise the hind legs high, rather like an exaggerated stringhalt of the horse, then tilt over and fall or half fall, but always able to get up.

When a case of milk fever is complicated by acetonaemia of a marked character it is usually possible to diagnose the condition by the odour of acetone in the milk. If this animal is treated for milk fever in the usual way it will be noticed that, although recovery has occurred, the appetite does not return to normal.

Aid to Diagnosis.—Rothera's Test on urine and milk.

Complications.

(1) *Milk fever* (really a complication of) although the reverse has been observed in one case.

(2) *Minor injuries* the result of falling—bumped knees.

(3) *Drenching pneumonia*—following the administration of a large draught when animal is showing nervous symptoms.

(4) *Traumatic reticulitis* has been seen in a few cases, which probably is not a complication but merely coincidental.

Terminations.—This condition is rarely fatal if left untreated (medicinally)—probably not more than 1 per cent. Although the condition is rarely fatal the consequent drop in milk and body weight is of some economic importance.

Post mortem Examinations.—*Post-mortem* examinations have been carried out and have revealed nothing beyond the marked odour of acetone when the peritoneal cavity is opened.

Treatment (*Nervous symptoms*—none required).

Early on, when this condition was first recognised, bicarbonate of soda in massive doses was administered without influencing the course of the condition. Later, dextrose in doses of 2 to 4 oz. in 200 to 400 c.c. of water was administered intravenously and not repeated. Even with this small dose an improvement was observed but not maintained. Relapses were very common or, rather, the rule.

Finally, it was found that the most beneficial effect was obtained by an initial dose of from 4 to 6 oz. of dextrose in 400 to 600 c.c. of water intravenously followed by, depending upon the severity of the attack, at least two more doses (of 4 oz. in 400 c.c.) at intervals of three or four days.

With this initial dose (always repeated) animals recover quickly and maintain general condition without a marked drop in milk yield (this is of great importance).

It must be pointed out that frequently clinical improvement precedes the reduction of acetone in the blood. When the condition is complicated by milk fever and is recognised, one intravenous injection of dextrose can be administered immediately after the intravenous injection of calcium, only this must be done slowly. There is a danger of collapse (not fatal) consequent upon the administration of a large volume intravenously.

In addition it was customary to give the animal iron tonics in 1 lb. of treacle twice a day.

DIET.—Much has been written about paying attention to diet, but an affected cow so frequently suffers from a depraved appetite that she will not eat the normal foods.

Green food is essential—turn the animal out, summer or winter. Animals showing nervous symptoms cannot be turned out; they should be put into a loose box and drenching avoided until the nervous symptoms have ceased. Crushed oats, bran and flaked maize are useful. Boiled potatoes, 7 to 8 lb. per day, appear to be beneficial.

DISCUSSION

Over a fairly long period questions have been asked of farmers about feeding before and after calving and it cannot be said that one method of feeding predisposes to the condition more than another. One point, however, may be of interest—in some of the very large herds in Jersey where milk recording was carried out accompanied by the usual irrational pre-war feeding, no cases were encountered, yet on other farms where feeding was more reasonable the disease appeared with monotonous regularity. These larger farms were entirely connected with dairy farming, while the other smaller farms were concerned with the growing of potatoes and dairying. All foods such as maize, roots, were grown on land from which a crop of potatoes had been grown earlier in the year.

Conclusions

(1) This condition is essentially associated with intensive mammary activity and is not connected with uterine infection.

(2) Intravenous injections of glucose, if given early in the course of the disease and repeated, have a marked beneficial effect upon acetonaemia, *viz.*, recovery without marked drop in milk and body condition.

Acknowledgments.—I wish to take this opportunity of expressing my most grateful thanks to Drs. Green and Allcroft, of the Ministry of Agriculture and Fisheries, for all the assistance they have given me in the past few years. They have carried out the biochemical analysis of several hundred blood samples, sending back reports containing much valuable advice, and it is the biochemical data supplied by them which is included in the case records. Finally, I want to thank Dr. Green for coming here this afternoon, at great inconvenience, to open the discussion.

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Discussion

Dr. H. H. GREEN said that he had not come with the idea of opening the discussion but rather to listen to the clinical observations of Mr. Messervy. Although the blood analyses in connection with the paper had been carried out at Weybridge, Mr. Messervy had discussed them adequately himself and there was little further to add. The analyst had the easier part in such investigations, as compared with the veterinary practitioner who had the difficult task of correlating the biochemical picture with clinical findings and response to treatment.

With regard to the value of grass in preventing ketosis, it was a fact that typical "post-parturient hypoglycaemic ketosis," as described by Stinson, was much commoner amongst cows receiving heavy supplementary rations for milk production but it did sometimes also occur in cows at grass. A milder form of ketosis, however, was quite common in cows under stall conditions which disappeared on turning out to grass. This form was not necessarily related to date of parturition, and might not be associated with noticeable clinical symptoms except, perhaps, slight falling off in milk yield. Blood sugar and alkaline reserve usually remained normal, despite considerable acetonaemia, in distinction to the definite hypoglycaemia and tendency towards fall in alkaline reserve noted in the typical clinical condition described by Mr. Messervy. An apparently normal herd of 59 dairy cows had been studied at grass in the summer of 1937, in stalls in winter and again at grass in the summer of 1938. Wide variations in blood ketone values were observed indicating a definite rise under stall conditions in 70 per cent. of the herd, without, however, any manifestations of clinical symptoms. In 1938 the average winter value was 8·1 mg. per cent. or nearly three times the corresponding summer average of 3·0 mg. per cent. with 20 per cent. of the herd over 10 mg. and 7 per cent. over 15 mg. One cow actually reached 45 mg. per cent., but beyond slight inappetence and diminution of milk yield maintained this level for many weeks, and probably months, without other signs of ill-health. Both blood and sugar and alkaline reserve remained normal. Ketonaemia was merely a symptom of disorder and not a cause. It was generally regarded as an indication of disturbed "carbohydrate-fat metabolism," the ketone bodies arising from imperfect oxidation in the later stages of breakdown of long chain fatty acids. This was probably true for animals with single stomachs but with ruminants another source of blood ketones might be absorption of shorter chain fatty acids derived from rumenal fermentation.

In many of Mr. Messervy's cases the clinical condition associated with hypoglycaemic ketosis arose as a sequel to milk fever, and in this connection it was worth mentioning that in the numerous records of blood analyses at Weybridge on milk fever about one-third of the total cases showed moderate acetonaemia with values three to five times the normal.

He himself believed that the clinical "post-parturient hypoglycaemic ketosis," with symptoms most commonly occurring ten days or more after calving, was due to disturbance of normal endocrine function, most probably lack of balance in secretion of the several hormones attributed to the pituitary. Such a statement did not of course mean very much, except as indicating lines for future research. He felt that enough work had been done in correlating blood analyses with clinical pictures and that further advances were dependent upon studies on the endocrinology of the condition. One of the difficulties of the laboratory worker was to get cases which he could keep under daily and even hourly observation. Although, for instance, they had learned from Mr. Messervy's paper a good deal concerning the clinical response to persistent glucose therapy, little was known concerning the immediate effects of a glucose injection on the blood acetone level, how long the effect persisted and how frequently it was necessary to repeat injections. What was wanted at Weybridge, or other laboratory centre, was a small "metabolic disorders herd" of animals selected on their past history in such a way as to yield a high proportion of clinical cases from time to time for more intensive laboratory study.

With regard to detection of acetonaemia by the odour of acetone different practitioners varied widely in their judgment. He would like to congratulate Mr. Messervy on his uncanny olfactory powers, which at times enabled him to forecast the results of biochemical analysis to the nearest milligramme!

Professor WOOLDRIDGE thanked both the essayist and the opener for their efforts, and said that it had been suggested that some dysfunction of the pituitary gland was at the root of the cause of acetonaemia. Milk fever had been mentioned in the discussion and he was reminded of an intuitive feeling which he had that that disease was due to some hormonal upset, probably of a hormone secreted by the mammary gland itself, and until that hormone was discovered we should not get much further forward. It might be thought from the remarks that hypoglycaemia was an invariable accompaniment of milk fever. Work had shown that this was not so. Professor Wooldridge remarked that the old practitioner, for all his haphazard methods and deduction, was often not so far out with his treatment, and his powers of observation, were remarkable. For example, the recognised treatment for post-parturient dyspepsia (acetonaemia) was 2 lb. of treacle; also the old practitioner appeared to be quite well aware that "Dr. Green" was his best friend and knew that these cases derived benefit from being turned out in the green fields, and consequently many winter troubles disappeared in the spring.

Mr. N. P. MALE asked if Mr. Messervy had any experience of the oral administration of glucose. Was the pancreas involved in the causation of acetonaemia, and had the disease any connection with toxaemia in ewes?

Mr. MESSERVY replied that he had no experience of oral administration of glucose, with the exception of the oral administration of black treacle which had already been mentioned. He thought, however, that the intravenous method was important as opposed to the subcutaneous route because it caused less pain. He would leave the question of the pancreas to Dr. Green. He had no experience with sheep.

In amplification of the comment by Mr. Messervy, Dr. GREEN said that although combination of insulin injections with glucose injections had been tried in a considerable number of cases, particularly in Holland, the limited evidence available suggested that it was not worth while complicating glucose therapy with insulin.

Dr. E. G. WHITE mentioned an article which he had read recently (abstracted in the *Schweizer Archiv für Tierheilkunde*, 1942, Vol. 84, p. 193) in which pancreatic disease was quoted as a cause of acetonaemia in cattle. The treatment advised was 250 units of insulin subcutaneously, followed 15 minutes later by 300 to 500 gr. of glucose intravenously, the latter to be repeated on the following day if no improvement has occurred. Perhaps this treatment might be worth a trial.

One gathered from Mr. Messervy's remarks that the condition he described showed no seasonal incidence, but Dr. Green had implied that it was more likely to occur in housed cattle during the winter. Mr. Messervy had mentioned the possible advantage of feeding potatoes and the speaker wondered whether this was because of their high starch content. Dr. White had noticed that there was hypoglycaemia in all Mr. Messervy's cases and asked whether the condition was the same as that described by Mr. Catmur.

Mr. MESSERVY, in reply, said that with regard to seasonal incidence, there was a different system of cattle husbandry in Jersey—out all day and in at night all the year round. Over two or three years probably he had encountered most cases in late summer and autumn, probably due to the fact that more cows calved at this time. He had only experience of the use of insulin in one case—a marked case of acetonaemia associated with milk fever and hypoglycaemia. A six-year-old cow calved the first week in October. The attack occurred on November 23rd. Blood readings: calcium 2·9 mg., magnesium 4 mg. and acetone 12·4 mg. Treatment consisted of calcium borogluconate intravenously. The anima was up the following morning. She came into oestrus December 22nd, and had another attack of hypocalcaemia. Blood readings: calcium 3 mg., magnesium 4 mg., sugar 101 mg., acetone 20·2 mg. Treatment: calcium borogluconate intravenously. The animal relapsed, and he administered more calcium borogluconate subcutaneously on the 23rd, and after another relapse administered calcium borogluconate intravenously on December 24th. Dr. Allcroft suggested insulin as although the cow had recovered from the acute symptoms of hypocalcaemia, the appetite was not normal and the milk yield was low. 800 units insulin were given subcutaneously on January 7th and 1,200 units on the following day, and she recovered.

He pointed out that a high-yielding Jersey cow produced in one lactation more pounds of butter-fat than her own body weight.

Dr. GREEN did not see much point in complicating the treatment by using insulin.

Mr. CATMUR asked if all the cases of acetonaemia occurred in well-fed Jerseys.

Mr. MESSERVY: All cases were in Jerseys and he had never seen acetonaemia in poor cattle.

Mr. CATMUR referred to a herd of six very thin cows. All of them went down within one month with a condition simulating acetonaemia. The first was slaughtered by the owner. He was called to the others because of the smell of acetone and symptoms of depraved appetite—biting the walls, etc. His initial treatment was a dose of salts and he then gave calcium borogluconate and all got better in about three weeks. They were all turned out to grass. He then asked why grass did good in cases of acetonaemia.

Mr. MESSERVY could not say why. During a foot-and-mouth disease outbreak in Jersey all cattle were kept inside and his results when treating acetonaemia with glucose alone were not as good as usual. He said that if the cow could not be turned out, feeding mangold tops or other greenstuff appeared to be an aid to recovery.

Mr. E. T. A. WHITE asked if a high concentration of magnesium in the blood had any connection with symptoms of madness.

Mr. MESSERVY said that in his series of cases the blood magnesium was usually high, but he had seen no real cases of tetany such as occur in Britain. He had seen no symptoms of fear.

Mr. E. T. A. WHITE referred to relationship between the quantity of grass and metabolic disturbances, *e.g.*, last summer there was an extraordinary number of cases.

Mr. MESSERVY agreed that a flush of grass had great effect and bringing cows in from grass would often induce hypocalcaemia.

Mr. SPRATLING suggested that the value of turning out affected cattle might lie in the increased intake of oxygen resulting from increased exercise. The increased oxygen intake might result in improved oxidation of fats.

Dr. GREEN: The physiological mechanism for maintaining a constant composition of alveolar air was very good and there was no evidence of anoxaemia in the condition under consideration. When exercise proved beneficial, as it often did, the explanation had to be sought in other directions.

Mr. MESSERVY said that cut grass fed indoors appeared as good as grass eaten in the meadow.

Mr. MARTIN finds acetonaemia very rare in this part of England. It used to be very common in Ayrshire, where it was occasionally fatal. At Witney he had seen one fatal case, the duration of which was three weeks. He had never seen it in Friesians or Shorthorns, although he had smelt acetone without observing any symptoms. Was the faulty breakdown of fats associated with a high fat content of milk?

They used to treat acetonaemia by molasses taken from the barrel and not from a tin—they were very fussy about that. Was there some refinement that reduced the value of domestic treacle? Had breed, locality or the type of farming any influence on the incidence of acetonaemia?

Mr. MESSERVY had seen it in Shorthorns and cross-bred Friesians. He had several times noticed that the milk-fat value was very high at the time of an attack. For example, one case was giving 8 per cent. milk-fat at the time of an attack.

Dr. GREEN asked if that case was associated with a fall in milk yield? Receiving an affirmative reply from Mr. Messervy, Dr. Green said that a rapid reduction in milk yield could well account for a rise in butter-fat since production of "milk fat" and of "solids not fat" were to some extent independent of one another, and a sudden fall in milk yield tended to be accompanied by a temporary rise in percentage milk fat. This could be shown experimentally by administering phlorıdzin to a lactating animal. Sugar was excreted in the urine, with a fall in blood level available for lactose formation by the mammary gland. The milk yield dropped suddenly with a marked temporary rise in percentage fat.

Mr. S. J. EDWARDS asked for more co-operation between practitioner and biochemist. Discussing the aetiology of acetonaemia, he asked if it was possible to give prolactin to ward off ketosis. He pointed out that acetonaemia can occur either in high-yielders or in poor cattle (e.g., Mr. Catmur's case). There were records of it occurring in starvation experiments.

Was war-time feeding and reduction of protein in diet reducing the incidence of acetonaemia?

Mr. MESSERVY said that he could not answer the last question as he had no real experience from which to draw. He had not tried prolactin.

Dr. E. G. WHITE had noticed that there was hypoglycaemia in all Messervy's cases. Was this the same condition as that described by Catmur?

Dr. GREEN, speaking with reference to S. J. Edwards' remarks on war-time feeding, said that actual reduction of rations under war-time conditions was more likely to affect milk yield than to induce ketosis. Even under extreme conditions of underfeeding a so-called "fasting ketosis" was very difficult to induce experimentally in the ruminant except in the last stages of pregnancy when other factors, such as disturbed endocrine balance, entered the picture. In the so-called "pregnancy toxaemia" of ewes carrying twin lambs, associated with pronounced ketosis, one of the commonest precipitating causes of the condition was sudden interruption of nutrition in late pregnancy, but he would not like to say whether general lowering of the plane of nutrition in wartime had anything to do with the prevalence of post-parturient ketosis of the dairy cow.

Dr. N. S. BARRON described cases of starvation in pregnant cows which were living on straw only. A number of these ultimately died. *Post-mortem* examination revealed livers just like those seen in ewes suffering from pregnancy toxaemia. In view of the association of choline with liver metabolism some people had suggested this might be of value in such cases. He wondered what the choline content of grass was and whether this supplied the animal's normal requirements. Had Mr. Messervy considered or tried choline in cases of acetonaemia?

Dr. GREEN: The choline content of the diet had been related to deposition of fat in the liver of experimental laboratory animals but he was not aware of any definite evidence relating liver fat in ketosis of the ruminant to the choline content of the food consumed.

The PRESIDENT thanked Mr. Messervy for his paper, which was of great value, and Dr. Green for ably opening a lively and instructive discussion. He referred to post-parturient dyspepsia in cattle and thought that blood samples from these cases would probably be instructive.

Dr. GREEN said that if other practitioners cared to emulate Mr. Messervy and try to relate biochemical blood pictures with their clinical observations and responses to treatment, either in cases of acetonaemia or of other metabolic disorders such as hypomagnesaemic tetany (lactation tetany) or atypical milk fever, he would be glad to co-operate from the chemical angle. Weybridge offered a diagnostic service without charge, which many practitioners had found useful. Bottles and tubes for blood samples were sent out with schedules for filling in of clinical particulars by the practitioner. Although analyses took some time and results frequently did not reach the practitioner in time to influence his treatment of the particular case from which the sample was sent, the correlation of biochemical and clinical findings in a series of cases often placed him in a better position to deal with future occurrences of similar disorders. He improved his capacity for diagnosis and treatment by gaining more information on doubtful case histories.

Weekly Wisdom

A university is a place where young men and women, while preparing for one of the liberal professions, educate each other by conversation, under the guidance of tutors, better informed and more mature than they are themselves. Strike out any one of these elements, and the result may, for other purposes, be admirable, delightful, efficient: what you like. But it will not be a university: it will not impart the form of mind which it is the business of a university to create, to apply, and to be always improving. Standards are set from above, not from below: and progress, in matters of the mind, is by attraction upwards.

Unless, therefore, a university makes its members feel—I repeat, unless they make one another feel in their daily and common talk—that it is better to be learned than unlearned, better to be curious than indifferent, better to look up than down, and, in a word, better to be Somebody rather than Anybody, then it is not a university at all.
—G. M. YOUNG: "Provincial Universities: What's Wrong?"—*Sunday Times.*

The Occurrence of Abnormally Low Values for Blood Inorganic Phosphorus and Plasma Phosphatase in Sheep with Concurrent Hypoproteinaemia

JOHN DUCKWORTH and WILLIAM GODDEN
(From The Rowett Research Institute, Aberdeen)

During the course of a study of the food requirements of sheep, determinations of whole blood inorganic P, serum Ca, total serum proteins and plasma phosphatase were made. The sheep were divided into groups of six animals each—the members of any single group being normal, rachitic or recovering from rickets according to the experimental procedure used. Blood analyses were performed at three-weekly intervals.

From time to time reductions in serum proteins were observed. In some cases the change was transient, in others it persisted for several weeks. The diminution in serum proteins bore no relation to the experimental procedure, occurring sporadically in every group. The incidence was sufficiently low that not more than one animal in a group was afflicted at the same time.

Associated with each case of hypoproteinaemia were low values for blood inorganic P and plasma phosphatase. On the other hand, abnormally low values for plasma phosphatase were sometimes found without concomitant hypoproteinaemia, but only rarely.

In Table I are given the values for the hydraemic sheep. The blood analysis for each constituent is expressed as a percentage of the average value of the other five sheep of the same group at the same time.

Table I

Calcium, Inorganic Phosphorus, Protein and Phosphatase of Blood of Hydraemic Sheep Expressed as Percentages of Average Values found for Group-mates

Case	Protein	Phosphatase	I.P.	Ca
1	64	19	76	101
2	67	15	60	110
3	68	34	64	131
4	68	41	56	105
5	72	62	79	78
6	74	40	61	117
7	75	50	58	81
8	77	51	62	106
9	77	40	74	92
10	79	38	67	99
11	79	54	66	86
12	82	30	74	84
13	83	49	97	82
14	84	22	79	105
Average	74	40	68	97

It will be noted that the average reduction in serum proteins of all the hydraemic sheep was 26 per cent., that is, the average value found was 74 per cent. of the normal value. The serum Ca values were uninfluenced but there was an average reduction of 32 per cent. for inorganic P and of 60 per cent. for phosphatase activity. In most cases the reduction in inorganic P was roughly one-third but the reduction in phosphatase activity varied from about one-half to almost one-seventh of the average value for corresponding group-mates. There was no relation between the reduction in serum protein level and the reduction in phosphatase activity.

This observation is not without diagnostic interest since it shows that in a hydraemic animal the value for phosphatase activity even in a severely rachitic sheep may be reduced to within the normal range. It also may serve to contribute part of the explanation of the wide range in phosphatase values found by Allcroft and Folley (1941) for normal cattle and sheep. These workers concluded that the range normally observed was so wide that the determination had little diagnostic value. In a narrow sense this may be true but if low values, such as reported here, are the result of hypoproteinaemia or are related, in some other manner, to fluid exchanges within the body, the usefulness of the test is extended rather than restricted.

In the present study the phosphatase activity was determined by the method of Kay (1930) in which Na β-glycerophosphate serves as a substrate. Applying the Bodansky (1932–33, 1933) test, in which the same substrate is used, to over 200 samples of serum from calves and sheep, the following average values were found: calves $8{\cdot}2 \pm 2{\cdot}4$ (probable error) units per 100 ml. serum; sheep $6{\cdot}5 \pm 2{\cdot}0$ units.

Summary

In normal sheep and in sheep afflicted with different degrees of rickets transient hypoproteinaemia occurred. In all such cases there was a sharp reduction in plasma phosphatase activity together with a less severe reduction in blood inorganic P.

References

Allcroft, W. M., and Folley, S. J. (1941.) *Biochem. J.* **35**. 254.
Bodansky, A. (1932–33, 1933.) *J. Biol. Chem.* **99**. 197; **101**. 93.
Kay, H. D. (1930.) *Ibid.* **89**. 235.

CLINICAL COMMUNICATION

Salivary Fistula

G. MAYALI, M.R.C.V.S.

On July 22nd, when three horses that had been turned out for a week to pasture were brought up to their village stables, two of them were found to be affected with influenza and one with strangles. The influenza patients recovered after ten days' treatment. The animal with strangles had a sub-maxillary abscess which was lanced and healed, but the parotid gland was swollen and tender and was rubbed with liniment and fever powder given. There was a copious discharge from both nostrils, suggestive of nasal gleet. The parotid was lanced on July 31st and some pus evacuated. On August 2nd the nasal discharge had completely subsided and the opening was packed with antiseptic lint soaked in wound oil (pure rape oil and turpentine).

On August 6th there was a copious flow of saliva issuing from the operation wound which was dealt with by inserting a glass rod dipped in nitric acid (see Professor G. H. Wooldridge's "Encyclopaedia") and packed with antiseptic gauze. On August 10th the flow of saliva was less and the wound was again treated with the glass rod and nitric acid and its edges touched up with chloride of zinc and again packed with antiseptic gauze.

Four days later the salivary discharge had ceased and the wound was dressed with biniodide of mercury ointment, one in eight, and thereafter complete recovery occurred.

This horse, which was 17 years old, improved greatly in condition and on temperature dropping to normal was treated throughout with doses of raw linseed oil and liquor arsenicalis.

In the course of some 48 years' practice I have observed only four cases of this condition although I must have treated some hundreds of cases of strangles.

ABSTRACTS

[PREVENTION AND TREATMENT OF INFECTIOUS CALF SCOURS WITH "SULPHASUXIDINE" SUCCINYLSULPHATHIAZOLE. HERRIOTT, H. W. (1943.) *J. Amer. vet. med. Ass.* **111.** 261-263.]

A preliminary note is presented on the value of "sulphasuxidine" succinylsulphathiazole in the treatment and prevention of unidentified calf scours. The dose used irrespective of purpose is 1 gramme per kilo body weight per day in four equal doses every six hours, each dose combined with 1 ounce sodium bicarbonate and administered together in one pint of warm water. The drug itself is claimed to have a low rate of absorption and low toxicity and clinical evidence alone suggests it to be valuable for the purpose intended. The author states wisely that more extensive toxicological and bacteriological studies must be made before a final claim can be made for the drug. The result of these studies will be awaited with interest.

W. T. R.

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[EFFECTS OF PITUITARY GONADOTROPINS ON THE OVARIES AND THE INDUCTION OF SUPERFECUNDITY IN CATTLE. CASIDA, L. E., MEYER, R. K., MCSHAN, W. H., and WISNICKY, W. (1943.) *Amer. J. vet. Res.* **4.** 76-94.]

Ability of ovaries to show measurable gross response to treatment with unfractionated sheep pituitary appeared to be dependent upon the previous presence of vesicular follicles but not directly upon their presence. Repeated intravenous injections were much less effective than were repeated subcutaneous injections. Comparison between unfractionated ox and sheep pituitaries showed the former to be only slightly less effective. Quantitative results appear to be much less predictable than qualitative results.

Simultaneous injection of an oestrogen did not appear to enhance or modify the ovary stimulating action of gonadotropin.

Treatment of calves with follicle stimulating fraction combined with subsequent treatment with luteinising fraction gave rise to the production of eggs in some cases, and in some of these fertilisation was produced.

No evidence was found to suggest that the ovaries of pregnant cows were less sensitive to the action of gonadotropins than were the ovaries of non-pregnant cows. Unfractionated extract did not appear to initiate oestrus. When purified follicle stimulating fraction was used four out of nine cows showed accelerated oestrum after administration by the subcutaneous followed by the intravenous routes.

Evidence was produced suggesting an apparent difference in the potential fertility of eggs produced during the luteal and follicular phases.

Two cows which were submitted to prolonged treatment (35 to 40 days) with unfractionated pituitary extract showed severe ascites and loss of appetite.

J. G. M.

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[ESTABLISHMENT OF INFECTION WITH *Trichomonas foetus* IN BULLS BY EXPERIMENTAL EXPOSURE. HAMMOND, D. M., and BARTLETT, D. E. (1943.) *Amer. J. vet. Res.* **4.** 61-65.]

Cotton pledgets soaked in the vaginal washings from experimentally infected cows and heifers were introduced into the prepuces of five bulls. Two became infected: three remained negative after a number of exposures by this and other methods.

Thirteen other bulls were exposed a total of 154 times by other methods. None became infected.

No clinically recognisable symptoms were seen in the infected bulls.

J. G. M.

QUESTIONS IN PARLIAMENT

Milk (Pasteurisation)

Major PETHERICK asked the Parliamentary Secretary to the Ministry of Food, in view of the differences of opinion on the merits of pasteurisation of milk and of its effect on the milk trade, whether he will, before making the sale of non-pasteurised milk illegal, submit the question for examination to an impartial committee?

Mr. MABANE: The Government's policy, which is set out in Command 6454, was adopted after a full consideration of all the facts, and no modification is contemplated at present.

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Milk Testing Scheme

Mr. KENDALL asked the Minister of Agriculture whether the results of sampling of milk under the National Milk Testing and Advisory Scheme can be made available in all cases to the local authority in whose area the milk is retailed?

Mr. HUDSON: Most of the milk tested under the scheme is bulked with other milk before despatch to consuming centres. It would therefore not be practicable to carry out the hon. Member's suggestion.

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Agriculture: Post-War Policy

Mr. DE ROTHSCHILD asked the Prime Minister when he will be in a position to state to the House what is the post-war agricultural policy of the Government?

Mr. ATTLEE: As my right hon. Friend the Prime Minister indicated in reply to Questions by the hon. Member for Grantham (Mr. Kendall) and others on August 3rd, the subject of post-war agricultural policy raises large issues. These matters like other urgent subjects are under constant consideration. I am unable at present to say when it will be possible for a statement to be made.

Mr. TURTON: Can my right hon. Friend say what was meant by the "conflict of interests" on this subject to which the Prime Minister referred yesterday?

Mr. ATTLEE: I am not aware to what the hon. Gentleman is referring.

Mr. DE LA BÈRE: Does not the whole matter want clarifying?

LIEUT.-COLONEL HENEAGE: Is the right hon. Gentleman aware that there is great anxiety among the agricultural community in this country to have the post-war policy discussed, and cannot he possibly find a suitable date when the House can discuss it?

Mr. ATTLEE: Perhaps my hon. and gallant Friend will put that Question to the Leader of the House.

Mr. SHINWELL: Will the right hon. Gentleman bear in mind that it is impossible to determine post-war agricultural policy unless you determine the broader principles of post-war economic policy?

Mr. ATTLEE: My hon. Friend is quite right.

BREED SOCIETIES AND ARTIFICIAL INSEMINATION

At a recent meeting of the Executive Committee of the National Cattle Breeders' Association, at which ten Breed Societies were represented, questions concerning artificial insemination were considered and the following resolutions were unanimously passed and have been forwarded to the Ministry of Agriculture and Fisheries:

(*a*) "That in view of the fact that panels of referees for the licensing of bulls of all breeds exist already in all areas, this Association sees no difficulty in the same persons being asked to approve bulls selected for Insemination Centres on behalf of the Breed Societies concerned, and recommends accordingly."

(*b*) "This Association notes with regret, that the Ministry of Agriculture considers a system of identification of inseminated cows and their progeny unnecessary, and wishes to state that it is unanimously of the opinion that a record of identification of inseminated cows and their progeny is essential to the proper control and the success of the practice."

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Oct. 22nd.—Meeting of the Lincolnshire and District Division, N.V.M.A., at Lincoln, 2.30 p.m.

Oct. 22nd.—Meeting of the Yorkshire Division, N.V.M.A., at Leeds, 2.30 p.m.

Oct. 22nd.—Meeting of the Society of Veterinary Practitioners, at the Conway Hall, Red Lion Square, London, W.C.1, 2.30 p.m.

Oct. 22nd.—Meeting of the Eastern Counties Division, N.V.M.A., at Cambridge, 10.30 a.m.

Oct. 22nd.—Meeting of the Dumfries and Galloway Division, N.V.M.A., at Dumfries, 11 a.m.

Nov. 6th.—Second Annual General Meeting of the Society of Women Veterinary Surgeons.

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A Fine "Press"

It is safe to say that, despite the paper restrictions of the time, no former N.V.M.A. Conference gained anything approaching the widespread Press notice accorded this year's meeting—already reports and comments running into many hundreds, and representing periodicals of every type, have been received. We reproduce the following editorial from the last week's issue of *The Farmer and Stock-Breeder*, as a good example of the valuable publicity thus achieved.

Make Veterinary Work Attractive

In the 100 years during which veterinary service has been an organised profession it has secured many triumphs both through its research workers and its practitioners. It is no small achievement that the menace to farm stock has been reduced by the abolition of cattle plague, epizootic lymphangitis, sheep pox, contagious pleuro-pneumonia, rabies and glanders, all diseases which from time to time have decimated our herds, flocks and studs, and have checked development in both our pedigree stock and our commercial animals. Yet these achievements have never met with that public recognition they deserve.

Happily the importance of veterinary science has been recognised consistently by the Board of Agriculture of the past and its Ministerial successor. The establishment of the Veterinary Laboratory at Weybridge, the appointment of the Agricultural Research Council and its acquisition of the field research station at Compton, as well as the formation of the panel scheme for dairy herds, to mention no more, are signs of the sympathetic leaning of the authorities towards encouragement of veterinary effort and to the early application of its successes, and we must not overlook the contribution of the research work of many big agricultural commercial concerns.

Co-operation is still more necessary in the future, as the annual meetings of the National Veterinary Medical Association last week made clear. Education is also an essential, but most needed of all is that young brains should be attracted both to the practising and the research sides.

The expansion of the panel scheme for dairy stock would doubtless be more rapid, and our progress towards healthier and consequently more productive animals more definite, with the widening of the profession on the basis of financial attractiveness. For the moment the war is a bar to any speedy forward movement; but it is time now to think of making veterinary service attractive to young people as they emerge from the Forces, if we are to make that service more comprehensive as well as to maintain progress.

There is, indeed, much to be done. We have got rid of diseases which gave opportunities for frontal attack; more insidious and just as baneful are foot-and-mouth, tuberculosis, contagious abortion, Johne's disease and mastitis. Co-operation and education on the most liberal scale are the best means of seeking their eradication.

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R.C.V.S. OBITUARY

Pottie, Stuart Campbell, Woodside Park, Berry, New South Wales. Graduated Glasgow, May 30th, 1891. Died at Berry Hospital, September 5th, 1943; aged 76 years.

Young, Thomas Dunlop, O.B.E., M.R.C.V.S., D.V.S.M., Lt.-Colonel late R.A.V.C., 60, Howard Road, South Norwood, S.E.25, graduated London, July 17th, 1909. Died October 7th, 1943; aged 75 years.

Death of Lt.-Col. T. Dunlop Young

The sad tidings of the passing of Colonel Dunlop Young, which took place at his home in South Norwood on October 7th, after a period of ill-health extending from the end of last year, will be received with the deepest regret not only by the very large number of members of the profession who enjoyed his friendship but by countless others, in this country and abroad, who also held him in deep esteem and appreciated the value of his work in a sphere of vital importance to public health: as a recognised authority on meat inspection he travelled widely over the world in an advisory capacity.

A memoir of Colonel Young, who ten years ago retired from his appointment as Chief Veterinary Officer to the Corporation of the City of London and Chief Meat Inspector at Smithfield, will appear in an early issue. He received his O.B.E. for his services with the R.A.V.C. during the last war, when he was in charge of a remount depôt in France. Many avenues of service were followed with ability and devotion by Colonel Young, including periods as a member of Council of both the Royal College and the N.V.M.A. Deep sympathy is extended to the bereaved—two sons and the daughter by adoption who attended him so devotedly during his last illness.

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PERSONAL

Appointment.—Mr. J. Gordon Souter, M.R.C.V.S., D.V.S.M., veterinary inspector to the Ministry of Agriculture (Animal Health Division in Aberdeen, has been promoted divisional inspector at the Ministry's head office. Mr. Souter was on the staff of the Aberdeen County Council for a number of years before joining the Ministry of Agriculture in 1938.

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Birth.—Rae. On October 6th, at Victoria Nursing Home, Ripon, to Jean, wife of Alan Gordon Rae, M.R.C.V.S., Boroughbridge, a son.

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Marriages.—Buckner—Hughes.—On September 18th, at St. Jude's Church, Dulwich Road, London, Derek Richard Percy Buckner, M.R.C.V.S., R.A.F.V.R., younger son of Mr. F. P. Buckner, M.B.E., and Mrs. Buckner, of Kueseong, India, to Miss Patricia Hughes, only daughter of Mr. and Mrs. F. A. Hughes, of "Richmond Lodge," Tulse Hill, London.

Harkness—Smith.—In Glasgow on September 18th, 1943, David Harkness, M.R.C.V.S., of the Ministry of Agriculture, to Mabel Elizabeth Smith, of Hamilton.

McPherson—McLeod.—At Fisher Street Presbyterian Church, Carlisle, on September 17th, 1943, by Rev. John Mathews, M.A., B.D., Ewan Allan McPherson, M.R.C.V.S., elder son of Mr. and Mrs. McPherson, Solsgirth, Dollar, to Margaret Templeton, second daughter of Mr. and Mrs. McLeod, Nether Clifton, Southwick, Dumfries.

Rickard—Woodget.—On September 28th, 1943, at St. Mary's Church, Callington, Stafford Rickard, M.R.C.V.S., only son of Mr. and Mrs. S. J. Rickard, of Callington, Cornwall, to Pamela Woodget, M.R.C.V.S., elder daughter of the late Captain H. G. Woodget and Mrs. R. A. Wordingham, of Overy Staithe, King's Lynn, Norfolk.

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MINISTER ON MEASURES FOR THE IMPROVEMENT OF LIVESTOCK

At Carmarthen recently, Mr. R. S. Hudson, Minister of Agriculture, spoke at the first of a series of mass meetings of farmers, farm workers, and landowners organised by the N.F.U. as part of the drive to increase home food production.

We had been and would always be predominantly a livestock country, said the Minister, but at the present time we had a shortage that had been estimated at a million head. We had to go back to grass on a large scale. That did not mean that the acreage of grass would increase, but that the new leys now being sown would produce far more feed for livestock than much of the old grass that had been ploughed or had still to be ploughed.

For years to come milk would be our Priority No. 1, and we had to keep up our milk herds. We still needed much more winter milk. In South Wales the variation between summer and winter output was still much too high. The average dairy herds in the country would have to be graded up and various steps had been taken to reduce the prevalence of disease. Among these were increased premiums for T.T. milk, the extension of inspections by veterinary inspectors, and the proposal that the Ministry of Agriculture should take over from local authorities the control of conditions under which milk was produced.

We had to improve the type of our livestock, whether for milk or for beef production. The greatest need was for a better supply of young bulls and good heifer calves, and the ending of indiscriminate cross-breeding. We could not afford to waste feeding-stuffs on unproductive stock, now or in the days of peace to come. Our pedigree stock was to be found in all parts of the world, and we must retain our traditional high standard. County committees had been asked to consider the whole policy of livestock breeding, and this was particularly important in Wales.

He had urged pedigree breeders to make good bulls from recorded herds available to dairy farmers and to offer them their surplus bull calves at reasonable prices rather than sell them for slaughter. Non-pedigree milk recorded herds could also be of much greater assistance. At the present time only 18 per cent. of the 40,000 bulls licensed annually were from officially recorded herds. Other steps which must be taken were the stimulation of the market for better types of young bulls and bull calves, and the preparation of county registers of herds approved for bull-breeding.

Up and down the country there were many farmers whose holdings were too small or too inaccessible for milk production but who could rear calves that had been set aside by the Ministry of Food graders as too good for slaughter. Mr. Hudson wanted these farmers to concentrate on breeding and rearing good heifer dairy calves and calves that would grow into good beef stores. This was of vital importance in Wales.

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ROYAL ARMY VETERINARY CORPS

The following announcement is made in the issue of *The London Gazette* dated September 28th, 1943: Pte. Frederick Charles Alexander (291084) to be Lieut., August 4th, 1943.

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BETTER MILK FOR SCHOOL CHILDREN

As part of the Government campaign to improve the milk supply, a census of all schools is to be made to ascertain the type of milk consumed under the milk in schools scheme. The Board of Education has informed education authorities that the Government attach the highest importance to the quality of milk supplied to school children and in the light of this census every effort will be made, in consultation with the local medical officer of health, to provide heat-treated milk or tuberculin-tested milk, where neither of these types of milk is now supplied.

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UTHWATT REPORT DECISIONS

Mr. W. S. Morrison, Minister of Town and Country Planning, revealed recently that the Government's findings on the Uthwatt report are almost ready for presentation. These include their proposals for giving effect to the two pledges already given—acceptance of the principle of the public acquisition of all land in reconstruction areas, and the principle that the compensation payable for the public acquisition or control of land shall not exceed the standard of values at March 31st, 1939.

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H.M. STATIONERY OFFICE PUBLICATIONS

The undermentioned have been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office.

	Price net s.	d.	*Post free* s.	d.
IMPERIAL AGRICULTURAL BUREAUX:				
Report on the Imperial Bureaux by a Committee under the Chairmanship of the Rt. Hon. Lord Hankey, G.C.B., G.C.M.G., G.C.V.O., F.R.S., August 3rd, 1943. (88-604)	1	0	1	2
Annual Report, 13th, of the Executive Council, 1941-42. (88-603-0-42)	1	0	1	1
AGRICULTURE AND FISHERIES, MINISTRY OF:				
Growmore Bulletin 5. War-time Poultry Feeding. (24-147-5-43)	0	3	0	4
COMMAND PAPERS (Session 1942-43):				
[6468]. Ministry of Health. Summary Report for 1942-43	1	0	1	2
STATUTORY RULES AND ORDERS, 1943:				
1345. Drugs (Shortage). Scarce Substances Order, September 6th	0	1	0	2

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Drastic measures have been taken by the Ministry of Agriculture to quell an outbreak of sheep scab in the West Riding of Yorkshire which threatened to spread into Derbyshire and prevent important sales. The disease was first noticed at the Sheffield City Abattoirs Thousands of sheep were rounded up from the Derbyshire moors and double dipped under police supervision.

Veterinary Surgeons and Military Service

In view of its importance, we reproduce below the joint announcement, printed in our issue of last week, made by the Ministry of Agriculture and Fisheries and the Ministry of Labour and National Service :—

1. In order to advise them on the measures which should be taken should the number of veterinary surgeons volunteering for commissioned service in the Royal Army Veterinary Corps fall short of military requirements, the Ministers concerned set up in May, 1943, the Army Service Veterinary Selection Committee of which Mr. John Smith, O.B.E., M.R.C.V.S., D.V.H., is Chairman and which comprises two representatives each nominated by the R.A.V.C., the Royal College of Veterinary Surgeons and the Ministry of Agriculture and Fisheries. The recommendations of this Committee which are briefly set below, have been accepted and will be introduced immediately.

2. A " pool " of veterinary surgeons has been formed from which the men needed for service in the R.A.V.C. will be recruited as required. This " pool " will comprise the following groups :—

(*a*) Men who graduated since January 1st, 1940.

(*b*) All future graduates.

3. In view of the great importance of maintaining essential veterinary services vital to the nation's war effort, the men in this " pool " who will be made available for military service in this way will be selected veterinary surgeons whose withdrawal from civil employment will be likely to cause the least possible disturbance to essential veterinary services.

4. The procedure for selection will be as follows :—

(*a*) The men concerned will be asked to complete a form of questionnaire which must be returned to the Committee without delay.

(*b*) The cases of men who, from the particulars given in the questionnaire, appear to be suitable for service in the Corps, will be investigated on behalf of the Committee by responsible officers of the Veterinary Inspectorate of the Ministry of Agriculture and Fisheries who will interview the employer and the man concerned. The object of this investigation is to furnish the Committee with an appreciation of the local situation to enable them to determine whether the man concerned could be released, if required, for service in the Corps, without serious detriment to essential veterinary services.

(*c*) Each case will thus be considered on its merits by the Committee who will prepare a list of men whom it considers could best be spared.

(*d*) The men on this list will then be summoned for interview by the Director of the Army Veterinary and Remount Service and those found to be suitable and medically fit for service will be offered commissions in the Corps.

(*e*) Men who, without good cause, refuse to accept the offer of commissions will be regarded as available for calling up for General Service in the ordinary way.

(*f*) Men to whom the R.A.V.C. do not propose to offer commissions will be allowed to remain in their civil employment.

5. The recruitment of volunteers will be continued as at present and veterinary surgeons (including men in the " pool ") who wish to volunteer for service in the Corps should communicate with the Director of Army Veterinary and Remount Services, The War Office, Droitwich Spa, Worcestersh re.

6. Any enquiries regarding the above arrangements should be addressed to the Secretary of the Army Service Veterinary Selection Committee, Ministry of Agriculture and Fisheries, Block 4, Bickenhall Mansions, London, W.1.

October 5th, 1943.

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SCIENCE AND THE FARMER

Headquarters of the N.F.U. has suggested to county branch secretaries that Technical Development, Research and Educational Committees should be set up in the counties on the same lines as the H.Q. Committee now being formed, which has 12 members, eight of them being Council delegates and four to be elected after nomination from the counties. All have some special knowledge of technical development, research or education.

Some indication of the scope of these committees has been given from Headquarters: the motto is to be " The improvement of agricultural output per man per acre." Subjects to be tackled in due time include: (1) Educational assistance in engineering for farmers; (2) development of pedigree cereals and grasses with a view to making these as famous abroad after the war as British livestock is to-day; (3) the marketing and purity guarantees for such pedigree cereals and grasses; (4) problems of animal disease; (5) research into new agricultural machinery.

It is emphasised that the N.F.U. does not intend to set up a vast new research department, work which is already adequately undertaken, but to help to provide a link between the scientist and

the farmer, and to ensure that research is going on in the directions in which the farmer needs it most.—*The Farmer and Stock-Breeder.*

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SHEEP HUSBANDRY AND RESEARCH

West Coast Cheviot flockmasters of experience find that the milking qualities of their ewes have declined. They consider that this is a phase of sheep husbandry in that territory which calls for some research as to the causes and as to the available means for improvement. This tendency for milking qualities of Cheviots to decline in that territory, of course, is not new. A large owner who has flocks in both the East and West informed us the other day that he has known of Skye breeders who had to cross their Cheviots with Blackface rams in order to "get back to milking properties" in the female stock. Occasionally doubts are expressed as to whether this disability of poor milking in the Cheviot ewes of the West is not due to the use of South-country-bred rams. But it is not improbable that the pastures may have lost certain elements in sheep nutrition that have not been restored to them, and that is where science and research may be able to detect what is wrong and how to right it.—*Farming News.*

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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CALF VACCINATION

Sir,—I hope that this scheme is launched, for I am of the opinion that in it lies the possible keynote of success, but at the same time I cannot visualise really effective control of any disease until this is extended over the disposal of those affected with it.

As to the remuneration, the scale of fees offered cannot be accepted, but this should be capable of adjustment, if the matter is approached on both sides with a spirit of conciliation. The most important thing of all is not mentioned in the preamble relating to this scheme in the Supplement of *The Veterinary Record* for September 11th, and that is, that female stock of a year of age and over should *not* be vaccinated until subjected to the agglutination test, for some of these will undoubtedly be already infected, rendering vaccination futile. I do feel that if we adopt an indiscriminate policy of vaccination of such stock, we may have a packet back. In some of the herds on my "panel," I am having abortions during the first pregnancy despite vaccination, and it is logical to assume in explanation, that either infection was present at the time of vaccination, or else that the immunity established was not sufficient when exposure to infection took place. The Wye Scheme, now unfortunately suspended, in my view was the most practical method devised to make progress against this disease. We are, however, very young in our experience in this country of calfhood vaccination, and if later we are going to make this general and compulsory, then there should be herds of deliberately unvaccinated animals with good environment and management, which should act as controls for observation over a period of several cattle generations, so enabling us to see through a number of control herds any difference in variation.

The fears expressed in paragraphs (4) and (5), second column, page 109 of the Supplement referred to, would become those of stark reality, if the one-portal system of entry into our profession was lost, for with it we would lose the R.C.V.S.—our one safeguard against bureaucratic exploitation, and it would be the general practitioner every time who would suffer most. This is one of the reasons why I have fought so hard and shall continue to do so, whenever its retention is threatened.

Yours faithfully,
J. F. D. Tutt.

Winchester.
October 5th, 1943.

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VIGILANCE REQUIRED

Sir,—To-day, when serious threats to its independent position seem to be converging in an attack upon the veterinary profession, its younger members, upon whom will fall forcefully the results of any misguided step now taken, cannot be too vigilant.

That tried and most cherished possession—the one-portal system—the value of which the passing of ten decades has only enhanced, is to-day in deadly danger.

There are some members who apparently can think of no better way of advancing the position of the profession than by belittling its scientific training, and past and present achievements, notwithstanding the normal and time-honoured reactions to this "crying of stinking fish"!

There are still others who seem to put all their faith in the Veterinary Surgeons Acts (Amendment) Bill, and, as regards quackery, blindly following the dentists instead of the medical profession, and this in spite of the fact that they can see the beginnings, small at present but likely to grow bigger with medical backing, of a public demand for the amending of the Dentists Act of 1921 to enable the establishment of a training school for dental hygienists. Note well that it is only just over 20 years since many thousands of quacks were taken on to the Register of Dental Surgeons in consideration of the passing of the Act!

At the recent Annual General Meeting of the N.V.M.A. two things stood out clearly:—

(1) That there is in the profession an overwhelming majority in favour of giving, at all costs, absolute, solid, and unswerving support to the maintenance of the existing one-portal system.

(2) That there is, also, an almost equally considerable majority in favour of a closer association with universities desiring to grant degrees in Veterinary Science, and reciprocate in the teaching of it, *i.e.*, a reciprocity, and promotion of friendly relations, with any university willing to leave the one-portal system of entrance to the profession entirely and absolutely in the hands of the R.C.V.S.

Yours faithfully,
Thomas Lishman.

23, Queen's Gate Gardens,
London, S.W.7.
October 2nd, 1943.

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"SHORTAGE OF VETERINARY ASSISTANTS"

Sir,—Major Frank Chambers' letter to the *Record* of a recent date lamenting the dearth of assistants and the general practitioner's consequent working day being 12 to 15 hours leaves me cold, for I have during the largest part of my professional life put in more 15 than 12 hours daily and am still doing so, and so far as I know without harm to my clientèle or myself. He also suggests releasing whole-time men to fill the gaps in general practice. This, to my mind, would be a retrograde step, but what I would like to see would be the age limit of Government departmental servants—and those of other public bodies—completely revised. The cast-iron standard of retiral at 60 years of age is often absurd and grotesque. Many men are active and virile, mentally and physically, at 70, while others are young men grown old at 50, and not a few come under Osler's slogan "Too old at 40."

I submit, therefore, that all men at the retiring age should be medically examined for their physical standard and psycho-analysed for their mental capacity before being "scrapped." If such a plan was adopted the assets to the State would be retained and the incompetents discharged.

Yours faithfully,
Wm. Scott.

Bridgwater.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Parasitic Mange*	Sheep Scab	Swine Fever
Sept. 1st to 15th, 1943 ...	10	3	—	3	25
Corresponding period in—					
1942 ...	10	98	—	7	31
1941 ...	11	—	—	6	28
1940 ...	13	—	—	3	246
Total Jan. 1st to Sept. 15, 1943	207	15	6	113	382
Corresponding period in—					
1942 ...	236	445	26	130	329
1941 ...	320	258	15	150	938
1940 ...	380	24	15	129	3,266

Note.—The figures for the current year are approximate only.
* Excluding outbreaks in Army Horses.